

#### **Technical Data Sheet**

# 0402 Package Chip LED

#### 16-213SURC/S530-XX/TR8

#### **Features**

- Package in 8mm tape on 7" diameter reel.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- Mono-color type.
- Pb Free
- The product itself will remain within RoHS compliant version.

#### **Descriptions**

- The 16-213 SMD Taping is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- Besides, lightweight makes them ideal for miniature applications. etc.

#### **Applications**

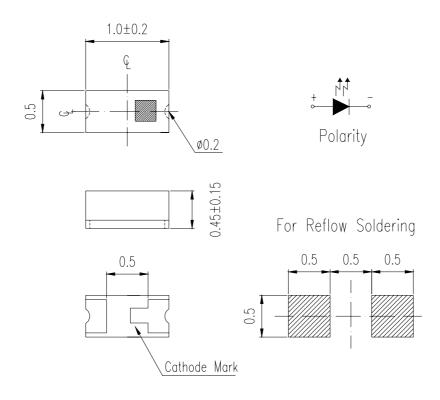
- Automotive: backlighting in dashboard and switch.
- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD, switch and symbol.
- General use.

#### **Device Selection Guide**

Material	<b>Emitted Color</b>	Lens Color
AlGaInP	Hyper Red	Water Clear

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# **Package Outline Dimensions**



**Note:** The tolerances unless mentioned is  $\pm 0.1$ mm, Angle $\pm 0.5^{\circ}$ , Unit = mm

#### **Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating	Unit	
Reverse Voltage	VR	5	V	
Forward Current	${ m I}_{ m F}$	25	mA	
Operating Temperature	Topr	-40 ~ +85	$^{\circ}\!\mathbb{C}$	
Storage Temperature	Tstg	-40 ~ +90	$^{\circ}\!\mathbb{C}$	
Soldering Tomperature	Tsol	260 (for 5	$^{\circ}\!\mathrm{C}$	
Soldering Temperature		seconds)	C	
Electrostatic Discharge	ESD	2000	V	
Power Dissipation	Pd	60	mW	
Peak Forward Current	т_	60	Λ	
(Duty 1/10 @1KHz)	IF	60	mA	

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#### 16-213SURC/S530-XX/TR8

# **Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	*Chip Rank	Min.	Тур.	Max.	Unit	Condition
Luminous Intensity	Iv	A2	15	36		mcd	I <sub>F</sub> =20mA
		A3	25	40			
		A4	36	50			
		A5	48	70			
		A6	58	89			
		A7	70	100			
Viewing Angle	2 \theta 1/2			120		deg	I <sub>F</sub> =20mA
Peak Wavelength	λр			632		nm	I <sub>F</sub> =20mA
Dominant Wavelength	λd			624		nm	I <sub>F</sub> =20mA
Spectrum Radiation Bandwidth	Δλ			20		nm	I <sub>F</sub> =20mA
Forward Voltage	VF			2.0	2.4	V	I <sub>F</sub> =20mA
Reverse Current	Ir				10	$\mu$ A	V <sub>R</sub> =5V

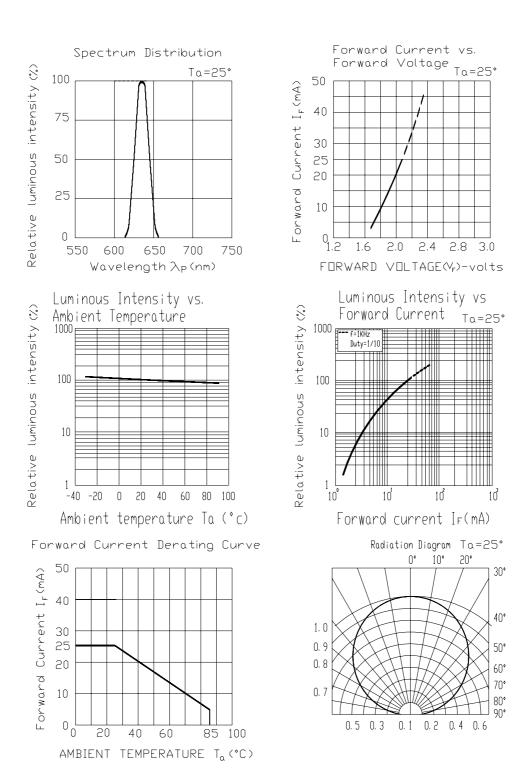
\*16-213SURC/S530<u>-XX/</u>TR8



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Prepared date: 01-25-2003 Prepared by: Teresa

#### **Typical Electro-Optical Characteristics Curves**



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## **■** Label explanation

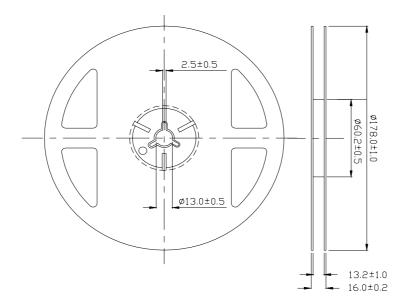
**CAT: Luminous Intensity (mcd)** 

**HUE: Dom. Wavelength (nm)** 

**REF:** Forward Voltage (V)



#### **Reel Dimensions**



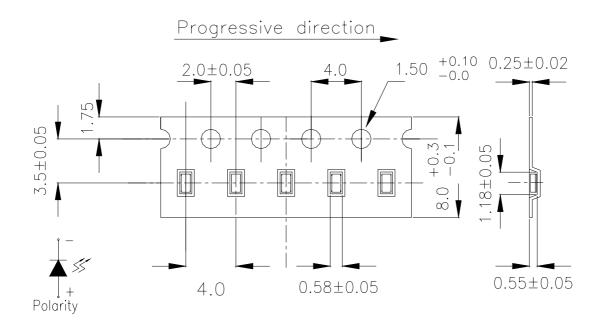
**Note:** Tolerances Unless Dimension ±0.1mm, Angle±0.5°, Unit = mm

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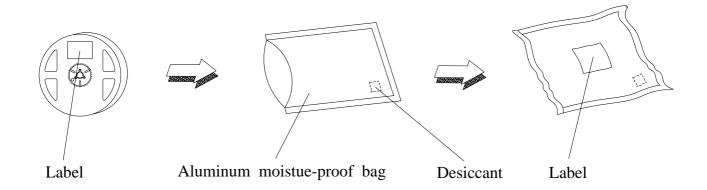
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## **■** Carrier Tape Dimensions: Loaded quantity 2000 PCS per reel



# **■** Moisture Resistant Packaging



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# **Reliability Test Items And Conditions**

The reliability of products shall be satisfied with items listed below.

Confidence level: 90 %

LTPD: 10 %

No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Rc
1	Reflow	Temp. : 240°C±5°C Min. 5 sec.	6 min.	22 Pcs.	0/1
2	Temperature Cycle	H:+100°C 15min. ∫ 5 min. L:-405°C 15min.	300 Cycles	22 Pcs.	0/1
3	Thermal Shock	H:+100°C 5min. ∫ 10 sec. L:-10°C 5min.	300 Cycles	22 Pcs.	0/1
4	High Temperature Storage	Temp. : 100°C	1000 Hrs.	22 Pcs.	0/1
5	Low Temperature Storage	Temp. : -55°€	1000 Hrs.	22 Pcs.	0/1
6	DC Operating Life	$I_F = 20 \text{ mA}$	1000 Hrs.	22 Pcs.	0/1
7	High Temperature / High Humidity	85°C/R.H85%	1000 Hrs.	22 Pcs.	0/1

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#### **Precautions For Use**

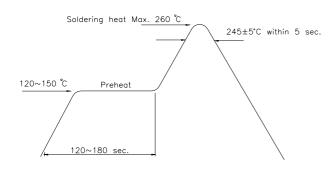
1. Over-current-proof

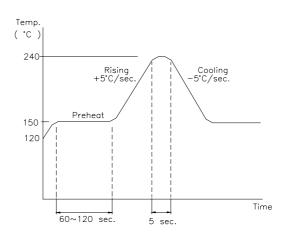
Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

- 2. Storage time
  - 2.1 The operation of Temperature and RH are :  $5^{\circ}$ C ~35 $^{\circ}$ C, RH60%.
  - 2.2 Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp proof box with descanting agent. Considering the tape life, we suggest our customers to use our products within a year(from production date).
  - 2.3 If opened more than one week in an atmosphere  $5^{\circ}\text{C} \sim 35^{\circ}\text{C}$ , RH 60%, they should be treated at  $60^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for 15hrs.
  - 2.4 When you discover that the desiccant in the package has a pink color (Normal = blue), you should treat them in the same conditions as 2.3.

#### **Soldering heat**

#### Reflow Temp / Time





#### **Soldering Iron**

Basic spec is  $\leq 5$  sec when  $260^{\circ}\text{C}$ . If temperature is higher, time should be shorter ( $+10^{\circ}\text{C} \rightarrow -1\text{sec}$ ). Power dissipation of Iron should be smaller than 15 W, and temperature should be controllable. Surface temperature of the device should be under 230  $^{\circ}\text{C}$ .

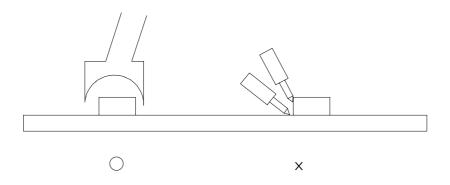
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Device No.: DSE-163-015 Prepared date: 01-25-2003 Prepared by: Teresa

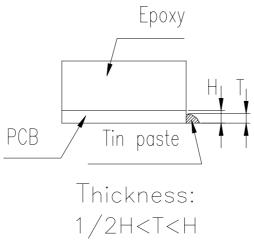


#### Rework

- 1. Customer must finish rework within 5 sec under 245°C.
- 2. The head of iron can not touch copper foil.
- 3. Twin-head type is preferred.



#### Thickness of tin paste:



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